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Date: 8/11/03

By: 
Rena Iov

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: WANG, Kangseng
APPLICATION No.: 09/781,046
FILED: February 8, 2001
FOR: **A METHOD AND SYSTEM FOR
INTRODUCING A GENE INTO A HUMAN
STEM CELL**

EXAMINER: Thaian N. Ton
ART UNIT: 1632
CONF. No: 9275

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Information Disclosure Statement
As Submission Under 37 C.F.R. § 1.114

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Sir:

1. Timing of Submission

This information disclosure is being filed with a Request for Continued Examination under 37 C.F.R. § 1.114. The references listed on the enclosed Form PTO-1449 (modified) may be material to the examination of this application; the Examiner is requested to make them of record in the application.

2. Cited Information

☒ Copies of the following references are enclosed:

- ☒ All cited references
- ☐ References marked by asterisks
- ☐ The following:

☐ Copies of the following references can be found in parent U.S. Application No. _____ :

- ☐ All cited references
- ☐ References marked by asterisks
- ☐ The following:

☐ The following references are not in English. For each such reference, the undersigned has enclosed (i) a translation of the reference; (ii) a copy of a communication from a foreign patent office or International Searching Authority citing the reference, (iii) a copy of a reference which appears to be an English-language counterpart, or (iv) an English-language abstract for the reference prepared by a third party. Applicant has not verified that the translation, English-language counterpart or third-party abstract is an accurate representation of the teachings of the non-English reference, though, and reserves the right to demonstrate otherwise.

- ☐ All cited references
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3. Effect of Information Disclosure Statement (37 CFR 1.97(h))

This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

4. Fee Payment

No fees are believed due. However, should the Commissioner determine that fees are due in order for this Information Disclosure Statement to be considered, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 50-2586.

5. Patent Term Adjustment (37 CFR 1.704(d))

- ☐ The undersigned states that each item of information submitted herewith was cited in a communication from a foreign patent office in a counterpart application and that this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this statement. 37 C.F.R. § 1.704(d).

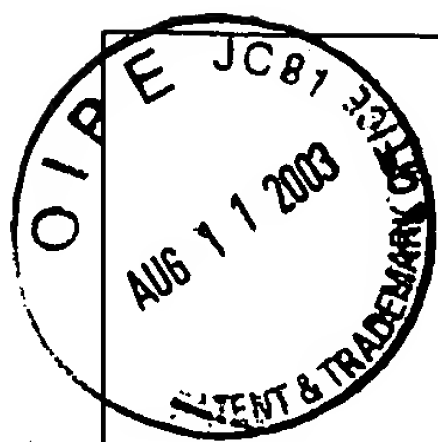
Respectfully submitted,
Perkins Coie LLP

Date: 8/11/03


James J. Zhu
Registration No. 52,396

Correspondence Address:

Customer No. 34055
Perkins Coie LLP
Patent – LA
P.O. Box 1208
Seattle, WA 98111-1208
Phone: (310) 788-9900
Fax: (206) 332-7198



**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

Form PTO-1449 (Modified)
(Use several sheets if necessary)

COMPLETE IF KNOWN

Application Number	09/781,046
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First Named Inventor	Kangseng Wang
Group Art Unit	1632
Examiner Name	Thaian N. Ton
Attorney Docket No	54269.8002.US01

Sheet 1 of 4

1.

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	U.S. Patent or Application		Name of Patentee or Inventor of Cited Document	Date of Publication or Filing Date of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		NUMBER	Kind Code (if known)			
	AA	US 2002/0004240 A1		Wang	1/10/02	
	AB	5,428,132		Hirsch et al.	6/27/95	
	AC	5,521,291		Curiel et al.	5/28/96	

FOREIGN PATENT DOCUMENTS

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		Office	NUMBER	Kind Code (if known)				
	AD	WO	01/73094 A2		BIOAGRI CORPORATION	10/4/01	/	
	AE	WO	00/29602		Cedars-Sinai Medical Center	5/25/00	/	
	AF	WO	00/08924		Perry et al.	2/24/00	/	
	AG	EP	0 846 772 A1		HOECHST AKTIENGESELLSCHAFT	10/6/98	/	

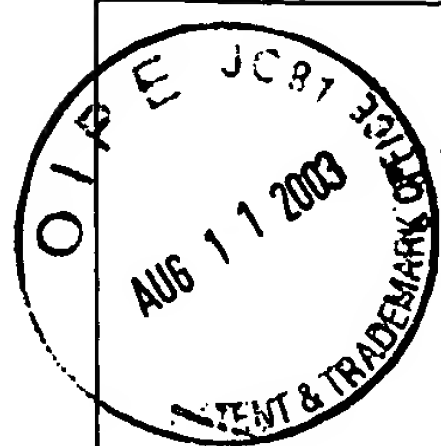
OTHER PRIOR ART-NON PATENT LITERATURE DOCUMENTS

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	AH	International Search Report for PCT International Application No. PCT/US02/02895, dated 10/7/03, 7 pages.	/
	AI	International Search Report for PCT International Application No. PCT/US02/40492, dated 6/5/03, 4 pages.	/
	AJ	International Search Report for PCT International Application No. PCT/US01/07018, dated 12/3/02, 5 pages.	/
	AK	Anwer, Khursheed et al., "Targeted Gene Delivery: A Two-Pronged Approach", <u>Critical Reviews in Therapeutic Drug Carrier Systems</u> , 17(4), pp. 377-424 (2000)	/

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	AL	Bookbinder, L.H. et al., "Tissue- and Species-Specific Express of sp56, a Mouse Sperm Fertilization Protein, <u>Science</u> , vol. 269, pp. 86-89 (1995)	
	AM	Burks, D.J. et al., "Interaction of a Tyrosine Kinase from Human Sperm with the Zona Pellucida at Fertilization", <u>Science</u> , vol. 269, pp. 83-86 (1995)	
	AN	Chang, Keejong et al., "Effective generation of transgenic pigs and mice by linker based sperm-mediated gene transfer", <u>BMC Biotechnology</u> 2002, 2:5, http://www.biomedcentral.com/1472-6750/2/5	
	AO	Cheng, Alice et al., "Sperm-Egg Recognition in the Mouse: Characterization of sp56, A Sperm Protein Having Specific Affinity for ZP3", <u>The Journal of Cell Biology</u> , vol. 125, no. 4, pp. 867-878 (1994)	
	AP	Cornwall, Gail A. et al., "Inhibition of the Mouse Sperm Surface α -D-Mannosidase Inhibits Sperm-Egg Binding in Vitro, <u>Biology of Reproduction</u> , vol. 44, no. 5, pp. 913-921 (1991)	
	AQ	FUSI, F.M., "In vitro production of human anti-sperm antibodies: effect of an oligoclonal antibody (F6) on sperm-egg interaction," <u>Journal of Reproductive Immunology</u> , Volume 29, No. 2, 1995, pp. 135-147.	
	AR	Gao, Zeren et al., "Species Diversity in the Structure of Zonadhesin, a Sperm-specific Membrane Protein Containing Multiple Cell Adhesion Molecule-like Domains", <u>The Journal of Biological Chemistry</u> , vol. 273, no. 6, pp. 3415-3421 (1998)	
	AS	Gougoulidis, Tiki et al., "Inhibition of Bovine Sperm-Oocyte Fusion by the Carbohydrate GalNAc", <u>Molecular Reproduction and Development</u> , vol. 54, no. 2, pp. 179-185 (1999)	
	AT	Hardy, Daniel M. et al., "A Sperm Membrane Protein That Binds in a Species-specific Manner to the Egg Extracellular Matrix Is Homologous to von Willebrand Factor", <u>The Journal of Biological Chemistry</u> , vol. 270, no. 44, pp. 26025-26028 (1995)	
	AU	Kadam, Arjun L. et al., "Fertilization antigen (FA-1) completely blocks human sperm binding to human zona pellucida: FA-1 antigen may be a sperm receptor for zona pellucida in humans", <u>Journal of Reproductive Immunology</u> , vol. 29, no. 1, pp. 19-30 (1995)	
	AV	Kalab, Petr et al., "p95, the Major Phosphotyrosine-containing Protein in Mouse Spermatozoa, Is a Hexokinase with Unique Properties", <u>The Journal of Biological Chemistry</u> , vol. 269, no. 5, pp. 3810-3817 (1994)	
	AW	Kameda, Kinu et al., "Comparative Studies of the Antigens Recognized by Sperm-Immobilizing Monoclonal Antibodies", <u>Biology of Reproduction</u> , vol. 46, pp. 349-357 (1992)	
	AX	Kim et al., "Effects of Experimentally Generated Bull Antisperm Antibodies on in Vitro Fertilization." <u>Biology of Reproduction</u> . 60: 1285-1291, 1999.	
	AY	Lacy, H. Marie et al., "Sperm protein 17 is expressed on normal and malignant lymphocytes and promotes heparan sulfate-mediated cell-cell adhesion", <u>Blood</u> , vol. 98, no. 7, pp. 2160-2165 (2001)	

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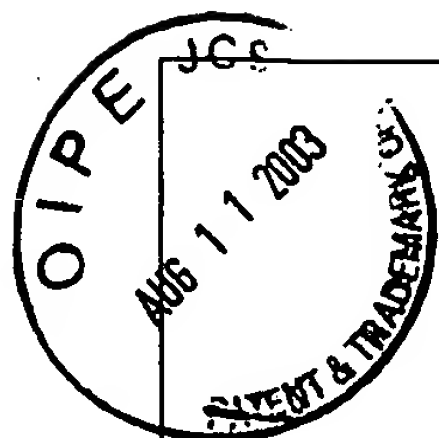
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	AZ	Lu, Qingxian et al., "Sperm from β 1,4-galactosyltransferase-null mice are refractory to ZP3-induced acrosome reactions and penetrate the zona pellucida poorly", <u>Development</u> , vol. 124, pp. 4121-4131 (1997)	
	BA	Miller, David J. et al., "Complementarity between sperm surface β -1,4-galactosyl-transferase and egg-coat ZP3 mediates sperm-egg binding", <u>Nature</u> , vol. 357, no. 6379, pp. 589-593 (1992)	
	BB	Morawatz, R., WRITTEN OPINION, issued on June 27, 2002 by PTO regarding International Application No. PCT/US01/07018, which claims the priority to U.S. Patent Appl. Serial No. 09/537,861, 9 pages.	
	BC	Mori, Kazumasa et al., "Blocking of human fertilization by carbohydrates", <u>Human Reproduction</u> , vol 8, no. 10, pp. 1729-1732 (1993)	
	BD	Nakamura et al., "Identification and Characterization of a Sperm Peptide Antigen Recognized by a Monoclonal Antisperm Autoantibody Derived from a Vasectomized Mouse." <u>Biochemical and Biophysical Research Communications</u> . 205: 1503-1509, 1994.	
	BE	Naz et al., "Antibodies to Sperm-Specific Human FA-1 Inhibit in Vitro Fertilization in Rhesus Monkeys: Development of a Simian Model for Testing of anti-FA-1 Contraceptive Vaccine." <u>Journal of Reproductive Immunology</u> . 27: 111-121, 1994.	
	BF	PAIN, B. et al., "Chicken Embryonic Stem Cells and Transgenic Strategies." <u>Cells Tissues Organs</u> . 1999, Vol. 165, pages 212-219.	
	BG	Pereira, Ben M.J. et al., "Rat Sperm Surface Mannosidase Is First Expressed on the Plasma Membrane of Testicular Germ Cells", <u>Biology of Reproduction</u> , vol. 59, no. 6, pp. 1288-1295 (1998)	
	BH	Richardson, Richard T. et al., "Sequence of a Rabbit Sperm Zona Pellucida Binding Protein and Localization during the Acrosome Reaction", <u>Developmental Biology</u> , vol. 165, no. 2, pp. 688-701 (1994)	
	BI	Rivkin, Eugene et al., "Molecular Cloning of Rat Sperm Galactosyl Receptor, a C-Type Lectin With In Vitro Egg Binding Activity", <u>Molecular Reproduction and Development</u> , vol. 56, no. 3, pp. 401-411 (2000)	
	BJ	SHAHA, Chandrima et al., "Monoclonal Antibody Against a Human Sperm Protein Recognizes Multiple Epitopes on Rabbit and Human Sperm and Blocks Sperm Function," <u>HYBRIDOMA</u> , Volume 12, No. 6, 1993, pp. 709-718.	
	BK	Töpfer -Petersen E. et al., "Spermadhesins: A new protein family. Facts, hypotheses and perspectives", <u>Andrologia</u> , vol. 30, no. 4-5, pp. 217-224 (1998)	
	BL	Töpfer-Petersen E. et al., "Sperm-associated protein candidates for primary zona pellucida-binding molecules: structure-function correlations of boar spermadhesins", <u>Journal of Reproduction and Fertility Supplement</u> 50, pp. 55-61 (1996)	

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	BM	Uherek, Christoph et al., "DNA-carrier proteins for targeted gene delivery", <u>Advanced Drug Delivery Reviews</u> , 44(2-3), pp. 153-166 (2000)	
	BN	Varga, Csanad M. et al., "Receptor-Mediated Targeting of Gene Delivery Vectors: Insights from Molecular Mechanisms for Improved Vehicle Design", <u>Biotechnology and Bioengineering</u> , vol. 70, no. 6, pp. 593-605 (2000)	
	BO	Yamasaki, Noriyuki et al., "Expression of the Rabbit Sperm Protein Sp17 in Cos Cells and Interaction of Recombinant Sp17 With the Rabbit Zona Pellucida", <u>Molecular Reproduction and Development</u> , vol 40, no. 1, pp. 48-55 (1995)	
	BP	Yan et al., "Characterization of Sperm Agglutinating Monoclonal Antibody and Purification of the Human Sperm Antigen," 1986, Int. J. Fertil. 31: 77-85.	
	BQ	Yan, Yuan Chang et al., "Characterization of cDNA encoding a human sperm membrane protein related to A4 amyloid protein", <u>Proc. Natl. Acad. Sci.</u> , vol. 87, pp. 2405-2408 (1990)	
	BR	ZANI, Massimo, "The Mechanism of Binding of Exogenous DNA to Sperm Cells: Factors Controlling the DNA Uptake," <u>Experimental Cell Research</u> , Vol. 217, No. 1, 1995, pp. 57-64.	
	BS	Zhu, Xiaolong et al., "Fertilization antigen-1: cDNA cloning, testis-specific expression, and immunocontraceptive effects", <u>Proceedings of the National Academy of Sciences</u> , vol. 94, no. 9, pp. 4704-4709 (1997)	

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